Status of the Claims

Claims 1-24 were pending. Claims 5, 6 and 8-24 were indicated as withdrawn from consideration by the action. Claims 1-4 and 7 were under consideration.

Claims 5, 6, 9, 10, 12, 13, 15-20 and 23-24 are canceled herein without prejudice or disclaimer. Applicants reserve the right to prosecute the canceled claims in a divisional or continuation application.

Claims 1-4, 8, 11, 21 and 22 are amended herein. New claims 25-36 are added herein. Claims 1-4, 7 and 25-36 are presently under consideration.

Support for the Amendments to the Specification

Amendment of Paragraphs [0041], [0044] and [0050]-[0055] is supported by Figures 1, 4 and 10-15, respectively, as filed.

In various portions of the Specification and claims, the intact galectin-3 sequence was incorrectly referred to as SEQ ID NO:2, instead of SEQ ID NO:3. The fact that the intact galectin-3 is actually represented by SEQ ID NO:3 is supported in the Specification at least at Paragraph [0072], as well as by the Sequence Listing of record in the application, which clearly shows that SEQ ID NO:3 contains the entire 250 AA sequence of intact galectin-3, while SEQ ID NO:2 is a truncated fragment of 144 AA in length, comprising the truncated sequence of SEQ ID NO:1 with an N-terminal cysteine residue added.

Further, the recitations to SEQ ID NO:2 in the Specification were internally inconsistent. For example, Paragraph [0081] refers to residues Tyr-63, Arg-129, Asp-241 and Ile-250 of SEQ ID NO:2. However, examination of SEQ ID NO:2 in the Sequence Listing shows that it is only 144 residues long and therefore cannot include an Asp-241 or Ile-250, and also that residues 63 and 129 of SEQ ID NO:2 are not Tyr or Arg. However, those residues are correctly numbered for SEQ ID NO:3.

Similarly, Paragraph [0102] indicates that SEQ ID NO:1 represents an N-terminally truncated form of the intact galectin-3 protein (SEQ ID NO:3) that is missing the N-terminal 107 amino acid residues (resulting in a 143 AA fragment), while SEQ ID NO:2 represents the N-terminally truncated fragment with "one or more cysteine residues on the N-terminus". (In the case of SEQ ID NO:2, one additional cysteine residue.)

Amendment of Paragraph [0119] to recite the GenBank Accession No. of human galectin-3 is supported by originally filed page 82 of the Specification.

Support for Amendments to the Claims

Claim 1 is amended to eliminate the surplus language, "an effective amount." Since the use of the composition is not specified in claim 1, there can be no "effective amount" for an undisclosed use.

Claim 1 is further amended to specify that the N-terminally truncated galectin-3 extends from an N-terminal end beginning between residues 1 and 22 of SEQ ID NO:1 and extending to residue 143 of SEQ ID NO:1.

Throughout the Specification and original claims, it is clear that the recited amino acid positions refer to the full-length human galectin-3 sequence (SEQ ID NO:3). For example, original claim 6 and Paragraph [0081] refer to an N-terminally truncated galectin-3 sequence "beginning with any of the amino acid residues from Tyr-63 through Arg-129, and that extends at least as far as any of the amino acid residues from Asp-241 through Ile-250." However, examination of the truncated galectin-3 sequences listed in SEQ ID NO:1 and SEQ ID NO:2 clearly shows that those sequences are only 143 and 144 amino acids long, and therefore cannot contain a residue number 250. Only the full-length galectin-3 sequence (SEQ ID NO:3) contains 250 amino acid residues. Further examination of SEQ ID NOs:1 and 2 demonstrate that the respective residues 63 are not tyrosine and 129 are not arginine, and there are no residues 241 or 250. However, examination of the full-length galectin-3 sequence (SEQ ID NO:3) illustrates that residue 63 is Tyr, residue 129 is Arg, residue 241 is Asp and residue 250 is Ile.

This is confirmed by the suggested modifications of "the N-terminally truncated galectin-3 sequence" recited in Paragraph [0232], which refers to Val-202, Val-204, Glu-205, Asp-207, His-208, Phe-209, Val-211, Ala-212, Asp-215, Ala-216, His-217, Tyr-221, His-223, Val-225 and Glu-230. Again, the truncated sequences shown in SEQ ID NOs:1 and 2 are less than 200 amino acids long and cannot contain residues No. 202-230. Examination of the full-length galectin-3 sequence (SEQ ID NO:3) shows that the listed positions are in fact identical to the specific amino acids recited in Paragraph [0232]. Thus, the skilled artisan would clearly realize that recitation in the Specification to amino acid positions references the full-length sequence of SEQ ID NO:3.

Comparison of the truncated SEQ ID NO:1 with the full-length SEQ ID NO:3 shows that SEQ ID NO:1 is missing the N-terminal 107 amino acid residues of SEQ ID NO:3. Examination of the N-terminal end of SEQ ID NO:1 shows that it starts with the AA sequence Gly-Ala-Pro-Ala-Gly-Pro-Leu-Ile-Val-Pro. This is identical to residues 108-117 of SEQ ID NO:3, which also reads Gly-Ala-Pro-Ala-Gly-Pro-Leu-Ile-Val-Pro.

This is confirmed in the Specification at Paragraph [0071], which states that, "The N-terminally truncated galectin-3 of the present invention is preferably lacking the N-terminal 107 amino acids." Paragraph [0071] states that, "The molecules can be somewhat longer or shorter than the 143 amino acid residue N-terminally truncated galectin-3 that is lacking the N-terminal 107 amino acids," clearly referring to the 143 AA long SEQ ID NO:1. This is confirmed by Paragraph [0102], which recites that, "In a preferred method, N-terminally truncated human galectin-3 that is lacking the 107 amino acids on the N-terminus, or is similar in function, is derivatized on the single cysteine in the sequence (SEQ ID NO. 1)."

Thus, in determining support in the Specification for claims reciting specific amino acid positions within the sequence of SEQ ID NO:1, it is necessary to subtract 107 residues from the amino acid positions relating to SEQ ID NO:3. E.g., position 108 of SEQ ID NO:3 corresponds to position 1 of SEQ ID NO:1, position 250 of SEQ ID NO:3 corresponds to position 143 of SEQ ID NO:1, etc. Any amino acid position equal to or less than 107 of SEQ ID NO:3 does not exist in SEQ ID NO:1.

Paragraph [0081] provides support for an N-terminally truncated galectin-3 sequence "beginning with any of the amino acid residues from Tyr-63 through Arg-129, and that extends at least as far as any of the amino acid residues from Asp-241 through Ile-250." As stated above, residues 63-107 of SEQ ID NO:3 do not exist in SEQ ID NO:1. Thus, with reference to SEQ ID NO:1, which was elected for the present examination, the possible N-terminally truncated galectin-3 sequences within the range discussed above correspond to a sequence beginning with any of amino acid residues from Gly-1 (Gly-108 in SEQ ID NO:3) to Arg-22 (Arg-129 in SEQ ID NO:3) and extending to any of the amino acid residues from Asp-134 (Asp-241 of SEQ ID NO:3) through Ile-143 (Ile-250 of SEQ ID NO:3).

Claim 2 is amended to recite the truncated galectin-3 extending from Ile-8 (Ile-115 of SEQ ID NO:3) through Ile-143 (Ile-250 of SEQ ID NO:3). The amendment is supported by

Paragraph [0008] of the Specification, which discloses that "the minimal folding domain of galectin-3, required for lactose binding... defined the minimal domain as about 136 amino acid residues, beginning with Ile-115 and extending through Ile-250 (9)." As lactose binding is a property of the claimed N-terminally truncated galectin-3 (see, e.g., Paragraph [0069]), the domain disclosed in Paragraph [0008] provides support for one embodiment of the claimed subject matter.

Amendment of claim 3 to recite an N-terminally truncated galectin-3 that is effective to reduce tumor size in breast cancer is supported in the Specification at least in Example 1 (e.g., Paragraphs [0171], [0173], FIG. 6, FIG. 9, Table 2).

Amendment of claim 4 to recite an N-terminally truncated galectin-3 that is effective to reduce metastasis in breast cancer is supported in the Specification at least in Example 1 (e.g., Paragraphs [0177], [0186], FIGs. 11-15, Tables 4-6).

Withdrawn method claims 8, 11 and 21 are amended herein to depend from or incorporate the limitations of the independent product claim, to put the method claims in condition to be rejoined in this application if the corresponding product claims are found allowable. Withdrawn claim 22 is amended to clarify the Markush language of the claim. Specifically, "a group consisting essentially of" is not standard Markush language. [MPEP 803.02]

New claims 25 and 26 are supported in the Specification at least at Paragraphs [0056]-[0057], [0065], [0069], [0071], [0100]-[0102], [0109]-[0111] and [0193]-[0198].

New claim 27 is supported in the Specification at least at Paragraphs [0089]-[0097] and [0232].

New claims 28-36 are individual species within the scope of amended claim 1. The new claims are supported in the Specification at least at Paragraph [0081].

Applicants respectfully submit that no new matter is added by amendment.

Remarks

Applicants request that amended claim 4 be granted the priority date of 6/10/02.

An amended oath or declaration will be filed.

The Specification is amended to conform to the drawings as filed with respect to FIGS. 1, 4, 10 and 11-15.

The recitation to Kim 1999, #955 has been replaced with the correct reference number as recited at Paragraph [0320] of the Specification.

SEQ ID NOs have been inserted into the Specification, consistent with the Sequence Listing of record in the application, except for original Page 82, which is deleted.

Rejection of claims under 35 U.S.C. 112, Second Paragraph

Claims 1-4 and 7 were rejected as indefinite for use of the term "truncated". Applicants respectfully submit that amendment of claim 1 to recite an N-terminally truncated galectin-3, "wherein the truncated galectin-3 begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO:1 and extends to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO:1," renders the claims definite and the metes and bounds of the claimed subject matter readily determinable to the skilled artisan.

Rejection of claims under 35 U.S.C. 112, First Paragraph

Claims 1-4 and 7 were rejected for lack of enablement. The Action asserts that the Specification is enabling for a composition comprising a polypeptide consisting of SEQ ID NO:1 but does not reasonably provide enablement for analogues thereof. Applicants note that the term "analogues" has been deleted from claim 2. Claim 1 does not refer to analogues. Recitation in new claim 27 to conserved amino acid substitutions at a few explicitly listed positions is enabled by the Specification at Paragraphs [0089]-[0097] and [0232].

The Action further asserts that the language of the claims, "are inclusive of fragments and variants of SEQ ID NO:1...which reads on 2 amino acids of SEQ ID NO:1." Applicants respectfully submit that amended claim 1 limits the claimed N-terminally truncated galectin 3 to a sequence of SEQ ID NO:1 which, "begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO:1 and extends to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO:1." Thus, the amended claims do not read on "2 amino acids of

SEQ ID NO:1." Nor does amended claim 1 recite "an effective amount." Applicants submit that, as amended, the claimed subject matter is fully enabled by the Specification.

The Action further asserts that the Specification is not enabling for the claimed compositions "for use in treating rheumatoid arthritis, juvenile idiopathic arthritis, atherosclerotic cardiovascular disease and cancer or to reduce tumor size." As noted by the Action, the intended uses of a claimed composition "are not given weight for purposes of comparing the claims with the prior art" and are therefore not an effective limitation on the scope of the claims. Accordingly, superfluous language suggesting the intended use of the compositions has been deleted from the claims.

Claims 3 and 4 are amended to recite the composition according to claim 1, "wherein said N-terminally truncated galectin-3 is effective to reduce tumor size in breast cancer," or "wherein said N-terminally truncated galectin-3 is effective to reduce metastasis in breast cancer." Applicants note that, as amended, the language refers to a characteristic of the claimed composition, not an intended use, and therefore does comprise a limitation on claim scope. Applicants submit that the scope of amended claims 3 and 4 is fully enabled by the Specification at least in Example 1 (e.g., Paragraphs [0171], [0173], [0177], [0186], FIG. 6, FIG. 9 and 11-15, Tables 2 and 4-6). The Action notes that the Specification is enabling for the claimed compositions "for use in treating breast cancer or to reduce breast tumor size." Applicants submit that the Specification is equally enabling for the claimed compositions to reduce metastasis in breast cancer and that the amended claims are fully enabled by the Specification.

Rejection of claims under 35 U.S.C. 102

Claims 1-4 and 7 were rejected as anticipated by Seetharaman et al. (JBC 1998, 273:13047-52, hereafter "Seetharaman"). The Action asserts that the Specification teaches that N-terminally truncated galectin-3 is galectin-3C, consisting of residues 107-250 of human galectin-3.

Rejection of claims under 35 U.S.C. 102 is improper unless each and every claim element is disclosed in a single prior art reference. As amended, claim 1 recites, " A composition

comprising N-terminally truncated galectin-3, wherein the truncated galectin-3 begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO:1 and extends to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO:1 and a pharmaceutically acceptable carrier." Applicants respectfully submit that Seetharaman does not disclose an N-terminally truncated galectin-3, beginning with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO:1 and extending to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO:1.

Applicants further submit that there is no disclosure in Seetharaman of the elements of amended claims 3 and 4, wherein the N-terminally truncated galectin-3 is effective to reduce tumor size or to reduce metastasis in breast cancer.

Applicants also submit that Seetharaman contains no disclosure of the elements of any of new claims 25-36, such as modification of the N-terminally truncated galectin-3 with one or more PEG molecules, attachment of PEG to Cys-66 of SEQ ID NO:1, substitution at specific amino acid residues, or further truncations of the galectin-3 sequence beyond N-terminal truncation at residue 107 of the intact galectin-3 sequence.

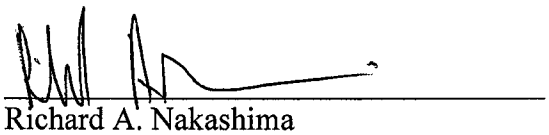
Double Patenting

Applicants note that the scope of amended claim 1 is not identical to claims 1 and 2 of U.S. Patent No. 6,770,622 and therefore the instant claims do not claim the same invention as the earlier issued U.S. Patent. With respect to obviousness type double patenting, Applicants agree to submit a terminal disclaimer over U.S. Patent No. 6,770,622 when otherwise allowable subject matter has been found.

Conclusion

Applicants respectfully submit that the claims as amended or newly added are in condition for allowance, for the reasons stated above. Reconsideration and withdrawal of the rejections are requested.

Respectfully submitted,



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